Measuring Growth on the Criterion-Referenced Test

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Measured Progress

The Assessment Toolkit
Helena, Montana
April 23, 2007

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A Little Background

Off-the-Shelf NRTs

- percentile ranks
- scaled scores
- vertical scales

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Issues with Vertical Scales

- extreme scores
- underlying basis

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Basic Skills/Minimal Competency/Mastery Tests

- narrowly defined or lower level skills
- 3 out of 4 = mastery

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Standards-Based Testing

- standards (cut scores) for performance levels
- content standards

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Statewide Tests

- "same" scale, each grade independent
- "higher" scale for higher grades, each grade independent
- vertical scale

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Issues with Vertical Scales

- vertical scaling = equating tests that don't measure the same thing
- vertical scaling of independently created tests
- underlying basis

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How Much Growth is Enough?

- NRTs and grade equivalents
- vertically scaled scores

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Standards-Based Testing

- reaction against normative information
- could still report same type NRT info
  - ✓"same" scale
  - ✓"higher" scale with grade
  - ✓vertical scale

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Standard Setting for Performance Levels

- fluctuating results across grades
- vertically moderated standards
- flat results over time and reactions

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Growth Models

- Improvement – grade x this year versus grade x last year
- Index/Value Table Approach – students awarded points for moving up a level or levels in successive years; maximum average points corresponds to 100% proficiency; AYP targets on points scale, rather than in percents proficient
- Growth Model – grade x this year versus grade (x-1) last year
- Value Added – change across year versus predicted change based on background and prior achievement

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Selected State Models

- TN: count students whose 3-yr projected performance is proficient along with proficient students for AYP
- NC: non-proficient students have interim target scores on way to proficiency in 3 years; count on-target students with proficient students for AYP
- FL: like TN at general level
- DE: value table approach

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"A growth model that only expects 'one year of progress for one year of instruction' will not suffice, as it would not be rigorous enough to close the achievement gap as the law requires."

--Peer Review Guidance for the NCLB Growth Model Pilot Applications (USDOE)

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A Simple Model – State or Local

Variation of NC

- interim target scores on path to proficiency for non-proficient students
- same can be done for proficient students going to next level
- students farther from proficient have more years (and interim targets) to reach proficient

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Growth Targets in Terms of Initial "Distance" from Proficiency

Annual Administration	2007 scores < 0.5 sd below proficient	2007 scores 0.5 sd or more, but < 1.0 sd below prof.	2007 scores 1.0 sd or more below proficient
2008	proficient cut score	half the distance closer	one-third the distance closer
2009	proficient cut score	proficient cut score	two-thirds the distance closer
2010	proficient cut score	proficient cut score	proficient cut score

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Strange Examples

Givens:

- 2007 grade 5 proficient cut at 75 and sd=16
- 2007 grade 6 proficient cut at 60 and sd=12

Target Computation

2007 Gr. 5 Score	2008 Gr. 6 Target
70, < ½ sd below cut	60, proficient cut
63, ¾ sd below cut	55.5, 3/8 sd below cut (half the dist.)
55, 1.25 sd below cut	50, .84 sd below cut (1/3 closer)

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More Familiar Examples

Givens:

- 2007 cut score for proficient is 250 at all grades
- 2007 sd=12 at all grades (would need verifying)
- Because of above, there is no need to work in sd units.

Target Computation

2007 Gr. 5 Score	2008 Gr. 6 Target
245, < ½ sd below cut	250, proficient cut
240, ½ to 1 sd below cut	245, half the dist.
235, > 1 sd below cut	240, 1/3 closer

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Decision Rules

- use large-scale (e.g., statewide) baseline sd forever
- recompute next year's target each year
- target is proficient for any student missing baseline score

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Discussion Points

- importance of vertically moderated standards
- basis of 3-year max to reach proficient
- can apply to proficient students moving to next level
- measurement error issues
- setting targets is more than monitoring growth
- "growth" can be overdone

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It's all about student learning. Period.

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